C-17A GLOBEMASTER III

USER MANUAL

Introduction

The C-17 Globemaster III is a high-wing, 4-engine, T-tailed military-transport aircraft used by the US Air Force and its Allies. The multi-service C-17 can carry large equipment, supplies and troops directly to small airfields in harsh terrain anywhere in the world day or night. The massive, sturdy, long-haul aircraft tackles distance, destination and heavy, oversized payloads in unpredictable conditions. It has delivered cargo in every worldwide operation since the 1990s. This Virtavia product is available in two versions, for both Flight Simulator 9 and Flight Simulator X. The FSX version is a 'native' FSX release, including the now standard technologies such as self shadowing, bloom effects, and bump mapping.

Installation

An easy installation is provided by way of an auto-installer, the C-17 will be installed to the default FSX or FS9 directory.

Please see the 'Package Contents' section on page 4 for more details on what is included in this package.

Credits

Visual model - Virtavia, with assistance from Michael Davies

External Textures - Pierre Lheureux

Flight Dynamics - Shane Olguin

Sounds - Turbine Sound Studios

Testing - the Virtavia Team : D Bushell, F Safranek, M London, N Gorn

Support

You can receive support by e-mail using : tech.support@virtavia.com

Copyright Information

These files are a commercial product and should NOT be treated as freeware.

These files may not be copied (other than for backup purposes), transmitted or passed to third parties or altered in any way without the prior permission of the publisher. Any breach of the aforementioned copyright will result in the full force of law being brought to bear on those responsible.

The source code for this product is closed. No modifications or reverse engineering may be carried out without prior consent from Virtavia Pty Ltd.

All rights reserved – copyright Virtavia Pty Ltd 2011

Package Contents

The Virtavia C-17 package contains one model variant and eleven texture schemes :

US AIR FORCE

33113 : Mississippi ANG, 183rd AS, 172nd AW, 'Spirit of the Purple Heart', Jackson IAP, MS

10186 : McChord AMC , 62nd AW, 446th AW, JB Lewis-McChord, WA

44130 : McGuire AMC , 305th AMW, 514th AMW, JB MDL, NJ

55140 : March AFRC , 452nd AMW, March JARB, CA

55147 : 15th AW, 154th WG, Hickam AFB, Hawaii

ROYAL CANADIAN AIR FORCE (CC-177)

177701 : 429 Squadron, 8 Wing, CFB Trenton

ROYAL AUSTRALIAN AIR FORCE

207 : No. 36 Squadron, RAAF Base Amberley, QLD

ROYAL AIR FORCE

ZZ171 : 99 Squadron, RAF Brize Norton, Oxfordshire

NATO

00001 : Heavy Airlift Wing, Papa AFB, Hungary

QATARI AF

80201 : Qatar Emiri AF, Al Udeid AB, Qatar

PRIMER PAINT :

00172 : Long Beach plant, CA.

Exterior Model

The exterior model has all the usual animations such as ailerons, elevators etc as well as some custom ones in FSX :

Main Exit: shift-E Right Side: shift-E+4 Thrust Reversers: hold F2

Paratroop Doors: shift-E+3 Cargo Hold Rear Doors (level): shift-E+2

Cargo Hold Rear Doors (to ground position) : Wingfold command (user set, can be F or W for example. Only works on ground)

The shift-E+n keypress can be awkward if you have not used it before, here's how it works : Hold down the shift key and then tap the 'e' key once. Release the shift key and tap the relevant number key once (don't delay). Note - paratroop doors are on the tailhook command in FS2004.

The thrust reversers return to normal position by tapping the F1 key.

The pilot figures can be toggled using ctrl-W (shift-W in FS2004)

Exterior Lighting

Pressing the L key will turn on all lights. You may however wish to turn them on using the appropriate switches in the cockpit, as the L key also puts the formation and taxi lights on, which should ideally be switched separately.

Shift-L will toggle the nav lights and the cockpit lights.

Crtl-L will toggle the landing lights.

Please refer to the cockpit section of this manual for information regarding light switch location.

The cargo hold lighting cannot be switched separately, it comes on with the navigation lights (shift-L to toggle).

Alternative Viewpoints in FSX

There are several different ways of looking at the aircraft and the cockpit, select these alternative views by right-clicking in an empty area and picking the 'Aircraft' menu for external views and the 'Cockpit' menu for views inside the cabin.

External View Options

Right Wing View

Left Wing View

Tail View

Refuelling Tanker Crew View

Landing Gear View

Loadmaster's View

Cockpit Views

Pilot's View (zoomed out)

Copilot's View

Right Jump Seat View

Left Jump Seat View

Center Console View

Overhead Panel View

Cockpit Entrance

Virtual Cockpit Functions

Main Panels

1) Cockpit lighting. Left knob toggles the instrument lights, right knob has three position dimming of all digits (not MFDs), use right-click to return to full brightness.

2) HUD main switch. AUTO provides automatic switching to day or night depending on time of day. Right-click to return to OFF.

3) Not supported.

4) Attention grabber lamps. Top to bottom - Ground Proximity (under 500ft w. gear up), overspeed, stall, master warning, master caution. The master lamps have a 'press to reset' function.

5) CNC 'Communication Navigation Control'.

A) XFER - swaps standby and active frequencies

B) IDENT - displays the ID (if available) in V/L and ADF modes.

C) C1 - toggles COMM1

D) C2 - toggles COMM2

E) V/L1 - toggles NAV1

F) V/L2 - toggles NAV2

G) FREQ - adjust displayed frequency. Larger knob alters MHz, smaller knob alters KHz. The knobs are spring-loaded left and right so use left-click and release, right-click and release.

H) CRS - in V/L1 and V/L2 modes, this rotary knob changes the heading value. It will affect any heading set in the autopilot, so use with caution.

I) ADF - toggles ADF

J) IFF - toggles transponder mode. Use FREQ larger knob to set.

K) MODE - swaps Normal for Channels mode. See CHANNELS below.

L) ID - toggles Auto-Ident (audio signal).

M) 'E' - open / close Channels window.

CHANNELS

The Channels window provides a table to select and store frequencies.

In the upper row, the frequencies can be selected and then stored in one of 6 “channels” using the "S" buttons. Once the frequencies are stored in these channels, they can be activated either directly using the "A" buttons, or by selecting them via the smaller knob 'G' of the CNC when in channel mode. It is recommended to store the desired frequencies for the flight before take off.

6) Sim Icons : the familiar window shortcuts.

7) Clock. Pressing the 'SEL' button changes the clock to a stopwatch. Then the 'CTRL' button can be used to start/stop the stopwatch.

8) MFD screens. 4 identical screens provide 5 selectable screens:

PFD (Primary Flight Display)

ND (Navigation Display)

PPI (not supported)

ENG (Engines display) a 2nd press of this button displays additional engine-related data.

CFG (Configuration Display) shows positions of control surfaces, landing gear and hydraulic pressure information.

MAP (GPS map display) shows the FSX GPS map. A 2nd press will add the terrain graphics.

MFD Dimming Functions

The knob at the bottom left corner can be set OFF, NIGHT and DAY. Left-click to advance, right-click to return.

Two rocker switches are also included - BKGND (not supported), and BRT - use left and right click of the mouse to adjust the dimming of the MFD screens. This gives 3 levels of dimming. As it is unlikely that only one MFD would be dimmed, dimming one screen will automatically dim the other three.

9) ATS/AP warning lamp. Illuminates when either autothrottle or autopilot is engaged.

10) Total Fuel Indicator. Displays total fuel quantity on board. Pressing the button resets the Fuel Used value on the MFD ENG display (2nd screen). The square lamp illuminates 'LOW' when total fuel reaches 16,000 lbs.

11) BDHI Selector Knobs. These toggle the pointers on the adjacent BDHI to show ADF rather than NAV1 and NAV2, which is their default status. 'ADF' will appear in the display window on the BDHI where the present NAV1/2 DME distance normally displays.

12) Bearing, Distance, Heading Indicator (BDHI). This RMI-type display has two pointers indicating the presently set NAV1 and NAV2 frequencies. These can be toggled to ADF using the adjacent selector knobs (see (11) above). Two DME display windows indicate the current distance to the selected station (if available).

13) Standby Artificial Horizon. Self-explanatory. Small switch bottom right on the unit cages the horizon ball.

14) Standby Altitude / Airspeed Indicator. Self-explanatory. The small knob bottom left adjusts the barometric setting (Kohlsman). The value set will also be repeated on the MFD Primary Flight Display screen.

Centre Panel

1) Fire Extinguisher Handles. These 4 (one for each engine) T-bar handles will both shut down the engine and extinguish the fire when activated. Use the mouse RIGHT click to activate them. A fire can be set in the FSX Failures section to test their operation. NOTE: fires cannot be set in FS2004.

2) AFCS (Automatic Flight Control System). This is the autopilot control panel of the C-17. The function of most switches on the unit is self-evident and can be revealed by their respective tooltips, however a few may need further clarification. Starting from the left side of the unit :

F/D - toggles the Flight Director

GPS - toggles NAV-GPS tracking

DCLT - steps through the 2 HUD declutter modes

ATT - toggles attitude hold

APPR PATH - when activated, this provides a horizontal blue bar (the Approach Path Indicator) on the HUD which acts as an aiming point for non-standard approaches, such as cargo drops. The bar is placed at the desired place on the runway ahead and (in the real C-17) the velocity vector is placed on the bar and the aircraft flown to it. FSX does not support an accurate velocity vector so the function of the API is only an approximation and should not be relied on. It can be set in increments of 1 degree up to 10, default is zero degrees (off).

3) Aileron Trim Gauge. The left and right side of the gauge can be moused to trim the aircraft roll axis.

4) Stabiliser Trim Gauge. The upper and lower halves of the gauge can be moused to trim the aircraft pitch axis.

5) Rudder Trim Gauge. The left and right side of the gauge can be moused to trim the aircraft yaw axis.

6) Standby Engine Display (SED). This unit is a digital display of actual engine N2/EPR, EGT, N1, EPR rating, and mode selected. N2 and EPR cannot be viewed at the same time, so a mode switching knob (lower left side) selects OFF/N2/EPR (use left click to advance, right click to return). In EPR mode, several more functions become available. The normal blue EPR rating chevrons on the engine display will change to a solid blue horizontal line in this mode and the five buttons on the right of the SED unit become active, as does the rotary knob on the upper left side. The default EPR (Engine Pressure Ratio) rating is provided by the MAN button, this allows the value to be manually set using the rotary knob, top left on the unit. The other four buttons provide presets for various EPR ratings (thrust levels). Use caution when experimenting with these as they will adjust engine thrust and this is unwise when on the ground or at low level. From top to bottom, the presets are as follows

: Maximum, Intermediate, Maximum Continuous Thrust, Derated Thrust and Manual Control.

7) Flaps Gauge. The Flap Position indicator dial shows flap positions from fully retracted (0°) to fully extended (40.5°). It is graduated in 4° tick marks with labels every 8°. The Flap Indexer window is currently not supported.

8) Speedbrake Position Indicator. Shows the position of the spoilerons on the upper surfaces of the wings. The gauge can be clicked around the white scale arc to set the spoilerons to a specific position. Note, left aileron input also causes the gauge to react, this is a limitation of FSX.

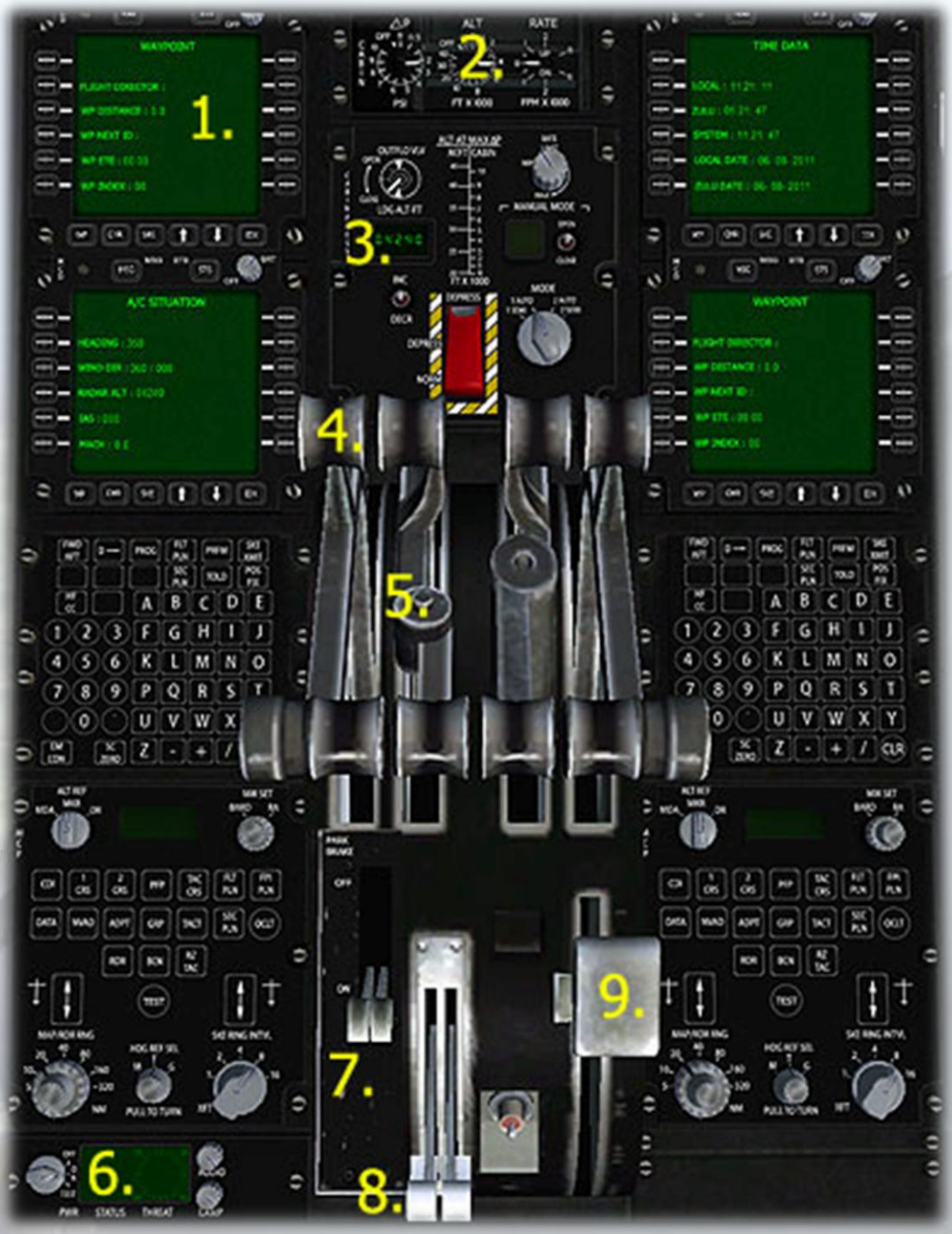
9) Landing Gear Lever. When the gear is in transit, the five lamps will illuminate red until the gear is latched. The lamps can be tested by pressing the test button. The Lock Release button is presently non-functional.

10) Brake Pressure Gauge. Indicates the hydraulic pressure within the braking system (simulated).

11) Slat Position Annunciators. The upper ' Slat Extend Annunciator' illuminates green when the leading edge wing slats are fully extended. The lower 'Slat Disagree Annunciator' will light when the slats are in transit and will extinguish once they are fully extended.

12) Anti-Skid Switch. Prevents wheels from locking up on braking (FSX only).

Centre Console



1) Mission Computer Display (MCD) (4, simulated). The MCD's are non-functional, although each can be independently switched on or off and on each, the lower two left buttons can be used to display waypoint, aircraft situation and time data. It is hoped that a suitable Flight Management Computer can be integrated into the model at some point in the future.

2) Cabin Pressurization Panel (CPP). Along the top edge of the CPP, there are three gauges - Cabin Differential Pressure Indicator (shows the difference between the cabin pressure and the ambient atmospheric pressure in pounds per square inch (PSI), the Cabin Altitude Indicator (shows pressure altitude of the cabin in feet x 1,000), and the Cabin Altitude Rate Indicator (shows the rate of cabin altitude change in feet per minute x 1000). Note, these gauges display the real cabin pressure values only in FSX, limitations in FS2004 mean simulated values based on Indicated Altitude and Vertical Speed were used.

3) Landing/Cabin Altitude Display. This digital display shows the altitude of the next GPS waypoint. It will only display a value if a flight plan has been saved, direct-to flights will not cause any value to be displayed, this is a sim limitation. In the real C-17, this display would show the altitude of the destination airport, as specified in the Mission Computer.

4) Throttle Levers. These 4 levers can also be pulled back for reverse thrust.

5) Autothrottle switch.

6) Missile Warning System Control Indicator (MWS). This system cannot be simulated in FS so it is merely represented by a switchable display.

7) Parking Brake Levers.

8) Pitch Trim Levers.

9) Flaps lever.

Overhead Panel

1) Standby COMM radio.

1 - On/off switch.

2 - Swap COM1

3 - Swap COM2

4 - Change COM1 freq. MHz (use left/right mouse click).

5 - Change COM1 freq. MHz (use left/right mouse click).

COM2 freq. change currently not supported, use CNC on main panel for all radio operations.

2) Environmental Panel.

1 - Engine/APU Bleed Air Switches (5). At least one bleed air switch must be on in order for the left or right air conditioning packs to work. If no engines are running, the APU can be started and bleed air from that used to power the packs.

2) Left Air Conditioning Pack Switch.

3) Right Air Conditioning Pack Switch.

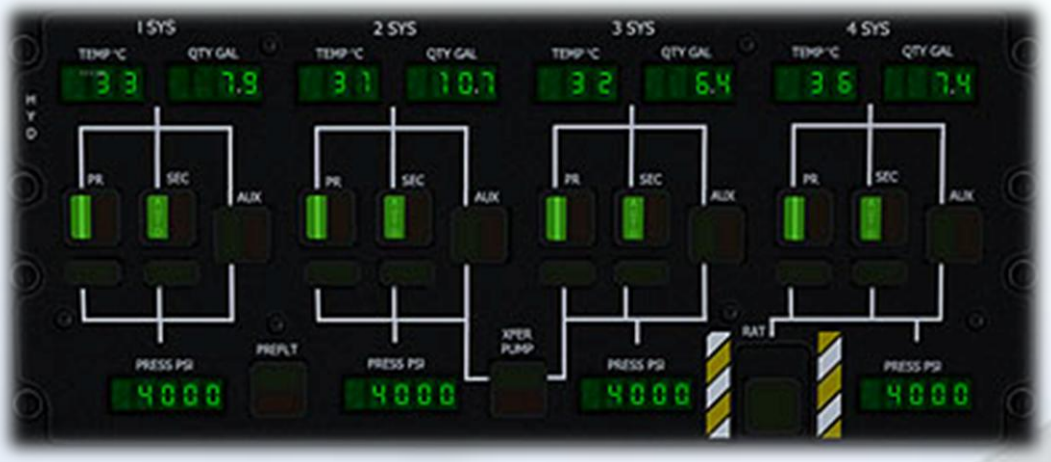
The various digital readouts indicate temperatures supplied to and from the aircon packs and to and from the three environmental zones - Flight Compartment, Crew Rest Compartment and the Cargo Compartment.

3) APU Panel.

1 - APU Start/Run Switch. The switch is 'spring loaded' so if the mouse is held over it, it will return automatically to the 'run' position once the mouse is released. If it sticks in 'start', a single mouseclick will return it to the 'run' position. Once one engine is running, the APU can be turned off by right-clicking the switch with the mouse.

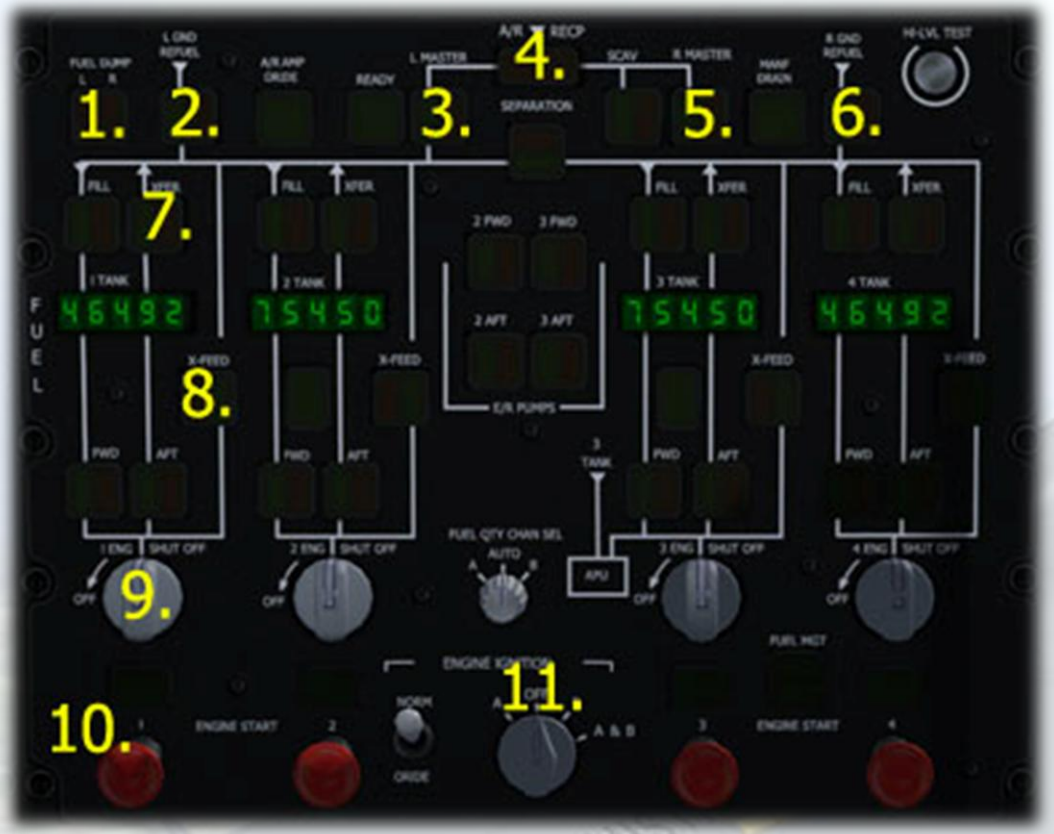
2 - APU RPM Display. The RPM will quickly run up to 100% once the APU is started. Releasing the switch from the 'start' position too early will stop the RPM from increasing. It must be at 100% in order to start the engine.

3) APU Exhaust Gas Temperature. Will climb to maximum 401 deg. C.



4) HYD Panel. This area of the overhead is not interactive, it merely displays the status of the four hydraulic pump systems. On starting a particular engine, the Auxiliary pump lamp will come on to prime the Primary and Secondary pumps. Once the pressure in the system has reached 4,000 PSI, the Auxiliary pump stops and the Primary and Secondary pumps take over. The digital readouts along the top display the temperature and quantity remaining of the hydraulic fluid in the four systems.

5) Electrical Panel. The four generators can be switched on or off here. The 'APU PWR' lamp indicates that the APU is on and power can be used from its own generator if required. The Master Battery Switch is located bottom left on this panel.



6) Fuel Panel.

1 - Fuel Dump Switch. Pressing this switch will dump fuel from the aircraft. Presuming the aircraft is in flight, trails of fuel will be visible from the wing vents. The fuel will be dumped from the left outer tank first, then proceed to the left inner, right inner and finally the right outer. This is something FSX does which unfortunately cannot be changed. Fuel dump is not supported by FS2004.

2 - Left Ground Refuel Switch. Press this to (instantly) refuel the aircraft, but only when on the ground.

3 - Left Master Air Refuelling Valve. Both this switch AND the Right Master Air Refuel Switch must be ON, and the aircraft must be airborne, for air refuelling to take place. The 'Amplifer Override' lamp on the windscreen centre pillar will also illuminate when either one of the master valve switches is pressed.

4 - Air Refuelling Door Unlocked Annunciator - this lamp comes on when both the Left and Right Master Air Refuelling Valves are switched on. At

the same time, the 'Ready' and 'Latched' lamps on the windscreen centre pillar will illuminate.

5 - Right Master Air Refuelling Valve. See 'Left Master Air Refuelling Valve'.

6 - Right Ground Refuel Switch. Press this to (instantly) refuel the aircraft, but only when on the ground.

7 - Fuel Transfer Annunciator (4). These will illuminate amber when the Fuel Dump is active and the level in the appropriate tanks reaches 12,000 lbs (outer tanks) and 28,000 lbs (inner tanks).

8 - Fuel Crossfeed Annunciator (4). These will illuminate amber when the Fuel Dump is active and the level in the appropriate tanks reaches zero.

9 - Fuel Shutoff Valves (4). Use these to stop the engines. Ensure that they are ON before starting the engines.

10 - Engine Starter Valves (4). Click and quickly drag down to start the appropriate engine. Make sure that either the APU is at 100% OR another engine is already running, the Fuel Shutoff Valves are ON and the Ignition Switch (below) is ON.

11 - Ignition Switch. Switch on to start engines. Can be switched off once all engines are running. Must be also used for mid-air relight.

7) Anti-Ice Panel

1 - Wing Anti-Ice Switch

2 - Engine Anti-Ice Switches (4)

3 - Pitot Heater Switches. The sim does not support multiple probes, so both switches work as one. The default state is illuminated amber, indicating that the Pitot Heat is OFF. A warning will be triggered if the ambient temperature drops below 5 degrees C and the Pitot Heat is off. In this case the Master Caution lamp cannot be reset unless the the Pitot Heat is switched on. The other lamps are not illuminated unless switched ON.

8) Lights and WACAP Panels

1 - Landing Lights Switch

2 - Taxi Lights Switch. This switch is 2-position, first click is taxi lights, second click activates the landing lights also. The switch can be returned to the taxi light position (and to OFF) by right-clicking it.

3 - Navigation Lights Switch

4 - Anti Collision Lights Switch. Switches the wingtip strobe lights on/off.

5 - Formation Lights Switch. Toggles the 'Slime Lights', ie. the formation markers at various locations on the aircraft exterior.

6 - WACAP (Warning and Caution Annunciation Panel). This displays a fixed set of warning prompts.

7 - WACAP Dimmer. One-stage dimming of the WACAP display.

8 - WACAP Test Button. Press to display the full range of warnings.

The cabin general illumination switch is called the 'Dome Light' and is located on the far left of the lower end of the Overhead Panel.

Addendum : working windscreen wipers added to FSX version 2.35.

Flying Guide and Performance Data

The in-game Checklist and Reference Sheet provide detailed information concerning the flight characteristics and reference speeds. These can be viewed whilst flying, or printed out (they are both HTML format).